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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/276,570	03/25/99	HUNG H	AM-3245

IM62/1122

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EXAMINER	
ULSEN, A	

ART UNIT	PAPER NUMBER
1746	6

DATE MAILED: 11/22/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/276,376	HUNG ET AL.	
	Examiner	Art Unit	
	Allan W. Olsen	1746	

-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *25 March 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

Page 1, line 9 and page 8, line 20 – the serial number of the related application is needed;

Page 10, line 11 – "[???]" should be deleted;

Page 12, line 12 – "mT" should be –mTorr--;

Page 12, line 16 – "T" should be –Torr--;

Page 13, line 13 – "mT" should be –mTorr--;

Page 13, line 17 – "T" should be –Torr--;

Page 17, line 6 – "mT" should be –mTorr--;

Page 17, line 10 – "T" should be –Torr--;

Page 17, line 19 – "[???]" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "wherein said biasing steps". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 2, 5-9, 12-15 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 5,770,098 issued to Araki et al. (hereinafter Araki).

Araki teaches etching an oxide layer selectively with respect to an underlying non-oxide layer using a plasma of C_4F_6, C_4F_8 or C_6F_6 in conjunction with Xe that is supplied at a rate 20 times greater than the rate at which the fluorocarbon is supplied. Araki teaches the application of up to 2500 W of RF power to the substrate supporting electrode. Araki also teaches that various types of plasma reactors can be used including ICP reactors and those with remote plasma generation. See: abstract; figures 10-12; col. 4, lines 47-51; col. 5, line 59 – col. 6, line 6; col. 9, lines 16-34.

Claims 1-8, 10, 12, 13, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 5,811,357 issued to Armacost et al. (hereinafter, Armacost). Armacost teaches etching an oxide layer selectively with respect to an underlying nitride corner feature using a plasma of C_4F_8 /C_2F_6 in conjunction with Xe. Armacost teaches a fluorocarbon:Xe ratio ranging from 10:90 to 20:80 and a C_4F_8 :C_2F_6 ratio ranging from 1:2 to 3:1. These teachings provide for the following C_4F_8 :C_2F_6 :Xe flow ratios; 3.33:6.66:90 or 7.5:2.5:90 or 6.66:13.33:80 or 15:5:80. Thus, while maintaining a

fluorocarbon:Xe ratio of 10:90 the relative C_4F_8 flow can range from 3.33 to 7.5. This range represents a 39% process window for the flow of C_4F_8. Also, the 3.33:6.66:90 ratio represents a Xe flow that is 27 times that of the C_4F_8 flow. Armacost teaches the use of an ICP plasma and teaches that reactors with remote plasma generation may be used. See: abstract; figure 1; col. 2, lines 28-40; col. 4, line 26 – col. 5, line 11; col. 5, lines 45-51.

Claims 1, 5-9, 12-15 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,069,092 issued to Imai et al. (hereinafter, Imai).
Imai teaches etching an oxide layer selectively with respect to an underlying non-oxide layer using a plasma of C_4F_6 in conjunction with Xe. Imai teaches the application of up to 2000 W of RF power to the substrate supporting electrode. Imai teaches the use of an ICP plasma and teaches that reactors with remote plasma generation may be used. See: abstract; figures 3 and 4; col. 2, lines 8-12; col. 4, lines 34-42; col. 7, lines 43-50; col. 7, line 63 – col. 8, line 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of U.S. Patent 6,074,959 issued to Wang et al. (hereinafter, Wang).

Claims 10 and 11 are dependent upon claim 8. Imai teaches the limitations of claim 8 as noted in the above 102 rejection.

Imai does not teach selecting process conditions to produce a 25% process window in the amount of fluorocarbon.

Wang teaches that processes with a small process window are difficult to control in a commercial environment and thereby Wang teaches the importance of obtaining large process windows.

As it would be obvious to one skilled in the art that the commercial viability of a process depends upon the size of the process window it would be obvious optimize the process conditions of Imai to achieve the largest possible process window. As Imai is a 102 rejection over claim 8 it is inherent that Imai would be capable of achieving the same process window (e.g. 25%) as the instantly claimed invention. Furthermore, for fluorocarbons less volatile than C_2F_6 Imai suggests using a pressure control flow meter as a means of regulating the amount of fluorocarbon introduced into the reactor and Imai teaches that these flow meters are known to suffer from a zero-point drift . Therefore, a built in tolerance for a variance (i.e. process window) in the amount of fluorocarbon would negate any detrimental effect form such a zero point drift.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in

scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-13, 14 and 15-20 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-13, 17 and 19-24, respectively, of copending Application No. 09/405,869. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan W. Olsen whose telephone number is 703 306-9075. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 703 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305-3599 for regular communications and 703 305-7719 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

Allan Olsen, Ph.D.
November 17, 2000

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700